North Carolina Division of Water Quality Response to Comments and Summary of Final Changes to NPDES Stormwater and Wastewater General Permit NCG140000 (2011 Renewal)

# **Background**

NPDES General Permit NCG140000 regulates **stormwater point source and authorized types of wastewater** discharges from ready-mix concrete (SIC category 3273) and like activities. NCG140000 expires on June 30, 2011. The North Carolina Division of Water Quality (DWQ) announced in selected newspapers across the State on or about April 5, 2011 that the Draft General Permit would be posted on our website for public comment from April 15 – May 15, 2011. DWQ concurrently ran this notice in the North Carolina Register and on the Stormwater Permitting Unit website beginning on April 15, 2011.

DWQ revises and reissues NPDES stormwater General Permits on a five-year schedule. In general, every five years DWQ reviews collected analytical data from the previous five-year term of the permits, evaluates identified compliance problems and problems in our enforcement of the permits, and seeks to improve the effectiveness of the permits as a stormwater management tool for the permittees. The renewal of NCG140000 was slightly different in that DWQ reissued the previous NCG140000 with no changes, and for a shorter time period from August 1, 2009 until June 30, 2011. Therefore for this permit renewal, DWQ reviewed data from an approximately 7 year term.

The draft NCG140000 permit and Fact Sheet were posted to the Stormwater Permitting Unit's website before April 15, 2011. The public comment period closed on May 15, 2011. During this time, DWQ staff received one written comment letter regarding the proposed draft permit. The Division also received other internal comments from the Regional Office and Central Office staff, and the Division of Water Quality's Aguifer Protection Section.

EPA Region IV staff in Atlanta was sent the draft General Permit on March 30, 2011. On May 24, 2011, EPA Region IV responded that the agency concurred with no comments. EPA's additional review and approval would have been necessary if the proposed final General Permit incorporated significant changes from the draft. DWQ concluded that this criteria was met and further EPA review was not required.

DWQ has prepared this summary document for interested parties that have submitted written comments on the draft General Permit, as well as any others. This document will be posted on our website for public access.

## **Comments and Responses**

DWQ received written comments, statements, and questions from the Carolinas Ready-Mixed Concrete Association, and from several internal DWQ parties on the draft General Permit during the announced public comment period. We appreciate the time and effort reflected in the comments. The comments have been bolded and arranged by topic, with DWQ's response presented in italics below.

## 1. Monitoring:

a. "The monitoring requirements of this permit appear to be predicated upon data generated under the prior version of this permit, which in turn is described by DNR as being confusing and incomplete. However, this data set is used to make permit decisions."

**Response:** DWQ stated that the data analysis was challenging. Some data that was submitted was incomplete, which made the review more challenging. However, DWQ did not believe this was a sufficient reason to disregard all data submitted by ready-mixed concrete facilities. DWQ has analyzed the data in as complete a manner as possible and has outlined the results of the data analysis in the Fact Sheet.

b. "In the Fact Sheet (page 6 of 20), a reasonably sensible strategy of allowing the comparison of monitoring results obtained to "cutoff concentrations" (to reduce required analytical monitoring for stormwater discharges) is abandoned on the basis of a) little data which could be used to provide confidence in average concentrations; b) processes or activities may change when the facility is not monitoring; and, c) periodic monitoring ensures the facility maintains 'vigilance in stormwater management'."

**Response:** Beginning in 2007, DWQ changed the monitoring strategy of all permits; cutoff concentrations and averages have been replaced with the Tiered Response Actions and Benchmark strategy. The reasons for adopting the new DWQ benchmark and Tiered strategy are outlined in the Fact Sheet: "The Division revised that strategy on the basis that (1) so few data points over the term of the permit were insufficient to provide confidence in an average concentration and justify discontinuation of monitoring, (2) industrial processes or activities may change during the period the facility is not monitoring, and (3) periodic monitoring ensures the facility maintains vigilance in stormwater management." DWQ Central and Regional Offices feel this strategy has also been an effective method and response management technique for all types of industrial facilities covered under NC DWQ's stormwater NPDES Industrial Program. We have modified the Fact Sheet to include this final statement.

c. "The draft permit requires semi-annual monitoring of stormwater discharges (and quarterly monitoring of process water discharges). Furthermore, the draft permit a three tiered approach should results obtained be compared to, and found in exceedence of, applicable benchmark values."

**Response:** The draft permit does require semi-annual monitoring of stormwater discharges and quarterly wastewater discharge monitoring. Stormwater analytical results should be compared to benchmark values and the action response should follow the three Tiered responses outlined in the permit.

- 2. Regular and Continued Stormwater and Wastewater Monitoring:
- a. "It is recommended that this permit provide recognition for the benefit and value of multiple stormwater discharge samples taken during the semi-annual monitoring period."

**Response:** NC DWQ feels it is necessary to obtain samples throughout the working industrial lifetime of any permitted NPDES industrial stormwater facility. This regular monitoring ensures and encourages sites to maintain structural and non-structural stormwater best management practices and wastewater treatment systems, as well as upholding good stormwater management practices onsite. Additionally, the Division feels that consistent monitoring ensures any industrial process changes that may affect stormwater or wastewater discharges will be captured by this regular monitoring. Because of the reasons listed above, DWQ concludes that a revision to the permit text is not advisable.

b. "Certainly, this General Permit allows a facility to obtain multiple samples after fulfilling their obligation of obtaining at least one sample during the monitoring term."

**Response:** Yes, that is correct. The facility may obtain multiple samples after fulfilling their obligation.

c. "Obtaining one sample, and then comparing the results to benchmarks, is often the basis for determination of what can and should be done to improve site conditions, operations or BMPs in order to achieve better water quality, which would be in turn should be reflected in better monitoring results. For example, if a concrete facility took a sample in January and exceeded a benchmark contribution, it would be prudent to evaluate the potential reason for the exceedence and take appropriate action. Determination of whether or not this "worked" would then be possible by taking an additional stormwater discharge sample during the period. In this case, this action, which would seem to be highly preferable to DNR, should be considered within the sampling, reporting, and "benchmark comparison" process. Under the current structure provided by the Draft Permit, it is not clearly considered."

**Response:** The permittee may take additional samples at will after addressing any stormwater or wastewater issues, and to test if these actions were effective and addressed

any or all issues. However, the permittee is not required to take multiple samples, and must only take another sample during the next semi-annual monitoring period as a requirement of the permit.

If the initial sample has addressed the issues (and the permittee is not yet in monthly sampling), then the permittee does not need to perform monthly sampling. If the permittee must sample monthly as a requirement of the permit, he or she must demonstrate that any issues are effectively addressed and stabilized by producing three consecutive monthly samples below benchmark values.

DWQ believes that it is important to show these consecutive samples to demonstrate effective and actual long-term changes to stormwater and wastewater management.

d. "It is recommended that the results of a single sample, or results of multiple samples obtained over the course of the sampling period, be what is compared to the benchmark value. There is no reason that the results of multiple samples, producing an average, would not be a valuable indicator of discharge quality from a facility."

**Response:** DWQ believes that although the comparison of averages from multiple samples may give some indication of discharge quality from the site, the use of averages is not the best method to show discharge quality, and may in fact disguise permit wastewater violations or stormwater benchmark exceedences. This in turn may then delay corrective action.

In the current draft permit, results of a single sample are compared to the benchmark value. DWQ believes the best pollutant control strategy is to consistently and habitually achieve those levels. Based on the reasons given above, DWQ has not incorporated changes to allow averaging of multiple samples in this permit.

e. "Should any facility operate under the belief that the results from multiple samples could be selectively reported, this permit could be modified to remind facilities that the results of all samples obtained are required to be reported."

**Response:** The NCG140000 permit language that addresses the requirement to report samples is located in Part V, Section E of this permit. DWQ believes the existing language in the permit addresses this recommendation and no further revisions are required. However, DWQ will add language in the NCG14000 Technical Bulletin to address this recommendation and provide further clarification..

f. "Multiple samples taken during a semi-annual period, obtained to gauge potential increase discharge quality at the discretion of a facility, would only serve to increase the "vigilance in stormwater management", which would be beneficial to all."

**Response**: DWQ agrees with this statement. This draft permit does not bar the permittee

from taking multiple samples at any point while under permit coverage. The permittee may find re-sampling useful in order to more quickly identify successful or unsuccessful attempts to correct discharge problems.

#### 3. Timeframe to send in Monitoring Results:

"It is recommended that this draft permit NOT require results monitoring within 30 days of receipt of monitoring data, but instead be required by 30 days following the end of the semi-annual monitoring period. This would address the potential for multiple samples taken during the period without the need for multiple reports."

**Response**: DWQ previously implemented a similar monitoring timeframe for another permit renewal; however execution has been difficult. DWQ has found that changing this timeframe adds confusion to the permitting process because it is different than the previous permit revision, and because the permittees then must remember to send in the results after the fact, not when they receive it.

Additionally, this recommendation requires creating a different timeframe for NCG140000 than for other general and individual permits. DWQ believes this would make implementation and enforcement more challenging across the state. Finally, DWQ Regional Offices have expressed that they prefer to receive data as soon as possible, especially because of the Tiered Response Actions in permits.

Based on the above considerations, DWQ concludes that a revision to the permit is not advisable.

## 4. Rain Gauge:

"It is recommended that the "total rainfall" parameter be met using either an on-site rain gauge or a reputable source of locally available precipitation data (which is both accurate and readily available today on the internet). It is noted that rain gauges used on industrial facilities, particularly when infrequently used (e.g., semi-annually), often break or are otherwise found to be unusable when needed."

**Response**: It is a requirement of DWQ's general permits that an on-site rain-gauge be present and used to measure the permitted site's rainfall. This on-site rain gauge is a requirement because local precipitation data may not be taken at a consistently close enough location to be sufficiently accurate for monitoring and reporting. It is the permittee's responsibility and a permit requirement that a functioning rain gauge be present on-site. Additionally, DWQ does not feel that maintaining a rain-gauge at sites is a major burden. Based on these considerations, DWQ concludes that this revision to the permit text is not warranted or advisable.

## 5. NCG140000 Renewal and New NOIs:

"Will a new NOI be required to gain coverage under the new permit?"

**Response**: North Carolina DWQ will not require existing active permittees to re-apply for active coverage for this 2011 renewal using a new NOI. Only new permittees and permittees that let their active status lapse will be required to submit a new NOI to be covered under this general permit.

## 6. TMDL & Impaired Waters Listings:

"Will DENR provide a web based tool similar or same as SC DHEC provided for identification of Impaired Water status and TMDL status?"

**Response**: Current TMDLs and Impaired waters can be found on the NC DWQ's Modeling and TMDL Unit's website: <a href="http://portal.ncdenr.org/web/wq/ps/mtu/tmdl/tmdls">http://portal.ncdenr.org/c/document\_org/web/wq/ps/mtu/tmdl/tmdls</a> (TMDLs) and <a href="http://portal.ncdenr.org/c/document\_library/qet\_file?uuid=8ff0bb29-62c2-4b33-810c-2eee5afa75e9&groupId=38364">http://portal.ncdenr.org/c/document\_library/qet\_file?uuid=8ff0bb29-62c2-4b33-810c-2eee5afa75e9&groupId=38364</a> (2010 303d list). DWQ Stormwater Permitting Unit hopes to add Impaired Waters and TMDL GIS layers next year to our Stormwater Interactive Map (found on our website). If and when these layers are added, DWQ will put a notification on its website.

## 7. Wastewater Treatment System Review and Design Basis:

a. "The permit and NOI requires an ATC prior to constructing any new wastewater treatment facilities. This submittal requires design specifics that demonstrate compliance with permit effluent limits. It has been shown that Stokes Law (the standard for settlement calculations) is not appropriate for calculating settlement times for cement particles due to several characteristics of cement when it becomes wet. As you are aware, there are numerous pit systems in operation that are producing effluent with concentrations well within discharge limits."

**Response**: DWQ has discussed the applicability of the Stokes' Law approach with NCSU professor Dr. Mike Leming. Dr Leming's areas of expertise include construction and concrete design and forensics.

Dr. Leming's verbal report to DWQ was that he has used the Stokes' Law approach applied to cement fines in constructing the treatment system in NCSU's Civil Engineering materials laboratory in order to treat the polluted flows resulting from mixing concrete in the lab. His verbal report to us acknowledged that as an engineering approach, the methodology was crude yet effective in controlling the discharge of solids from the lab activities. DWQ has also found that when put into practice, use of this method designs a treatment system that meets permit effluent limits.

DWQ would be agreeable to a review of pit operation systems that produce effluent within discharge limits using supporting data from these sites. If CRMCA can provide data to us to substantiate this point and include a survey to report the design basis for the pit systems, DWQ would like to know more about this and would be open to learning about alternative research after receiving additional data.

Please note that a change in the ATC review process will not influence the General Permit language as the permit does not specify that Stokes' Law must be used.

b. "Also, to date there has been no method presented to CRMCA that can adequately predict pH concentrations of effluent."

**Response**: This is a correct statement. The water chemistry involved is too variable and too poorly understood, and design practitioners generally are not aware of how to predict performance on a stoichiometric basis. Therefore, the DWQ precedent for an acceptable pH control configuration features an instrumented feed-back loop to control final pH.

c. "How does NCDENR plan to review these submittals without proven methods to demonstrate compliance for TSS and pH?

**Response**: It is clear that DWQ already has in place proven methods to predict compliance for TSS and pH. For review of TSS, DWQ currently employs the Stokes' Law methodology as it has been shown in the field that when put into practice, treatment systems modeled on Stokes' Law (and when built and maintained correctly) function effectively to meet permit limits. DWQ has indicated to the CRMCA that we would be receptive to proposals from the organization or its members that suggest an alternative method. Until that time, use of the Stokes' Law method is by default our interim methodology for modeling TSS compliance. Additionally, please see the above comment for a response regarding pH.

d. "Has consideration been given to removing these design specifics from the submittal requirements given the new Tiered response system in the new permit?"

Response: The Tiered response system is in response to a <u>stormwater</u> benchmark exceedence. These design specifics are in reference to Authorizations to Construct for <u>wastewater</u> treatment devices. DWQ does not believe the Tiered Response Actions will influence wastewater design requirements. DWQ has not found that permit review time and effort has been increased or influenced by the Tiered Response Requirements in other general permit reviews. Additionally, our recent evaluation of permit-review times from 2006-2010 shows that the average time for processing has gone from approximately 115 days to approximately 40 days. A legitimate engineering methodology and rationale must still be presented, but DWQ hopes that review time can remain low and continue to decrease.

## 8. <u>Design and Application Requirements for Closed-Loop Recycle Systems</u>:

"The new permit excludes closed-loop recycle systems from ATC requirements as long as these systems meet all the criteria and design requirements of 15A NCAC 02T .1000. Many of the requirements outlined in .1005 are not applicable to systems typically used at concrete facilities and may prove economically unfeasible if required. How does the Department plan to interpret the requirements for meeting this exclusion? Will the department requirement anything other than a notification from the permittee to the APS?"

**Response**: DWQ's NCG140000 NPDES General Permit does not require permittees to seek a closed-loop recycle system permit per the design requirements of 15A NCAC 02T .1000. These provisions fall under rules addressing DWQ's mission to protect groundwater, while the Stormwater Permitting Unit's mission is to protect Surface Waters under the NPDES rules.

The draft permit does not direct that the permittee must choose to build a recycle system. In most cases, permittees may discharge to surface waters when wastewaters are treated with an appropriate wastewater treatment system built to meet permit effluent limits, and when effective stormwater best management practices are in place. The permittee may choose how to best manage wastewaters and stormwaters from the facility (in most cases the permittee has the choice of either discharging to surface waters, discharging to groundwaters, or building a complete recycle system and not discharging). The treatment system the permittee chooses determines which regulatory restrictions apply.

The Stormwater Permitting Unit will send all pertinent applications it receives to DWQ's Aquifer Protection Section Land Application Unit (DWQ APS LAU). Additionally, the permit instructs all permittees wishing to be covered under 15A NCAC 2T 0.1000 design regulations to apply to DWQ's Land Application Unit. This instruction has been clarified in Part II, Section A of the permit.

Additionally, the permittee should be ready to produce LAU-approved plans or proof of the notification to the regional office, if DWQ Surface Water Protection Section Compliance Staff request.

9. Language covering monitoring and maintenance of wastewater treatment facilities: DWQ RO staff asked if language covering additional qualitative monitoring of wastewater treatment facilities needs to be added to the permit to ensure proper operation and maintenance of these systems.

**Response**: Part V, Section C of the permit (OPERATION AND MAINTENANCE OF POLLUTION CONTROLS) covers the proper operation and maintenance of treatment systems.

# **Summary of Other Changes to the Final Permit**

DWQ made minor changes to the draft permit before finalizing this permit based on DWQ Regional Office and DWQ APS LAU questions and comments. Because these changes were minor, DWQ concluded additional notice and/or EPA review was not necessary. The changes were:

- The word "wetlands" was added to the fourth bullet of on the front page. The language now reads: "The following activities are specifically excluded from coverage under this General Permit: ... Disposal of any concrete directly into stormwater conveyances, storm sewer outfalls, wetlands or into waters of the state".
- Language in Part II, Section A, (ATC language) has been revised per DWQ APS LAU comments. The language has been changed from the original wording reading:
   "New or expanding wastewater treatment facilities for wastewater discharges covered under this permit must receive an Authorization to Construct (ATC) from DWQ, except in the following instance:
  - Closed-Loop Recycle Systems that meet the design requirements in 15A NCAC 02T .1000, do not discharge to surface waters, and which specifically treat drum washout may be exempt from ATC requirements per 15A NCAC 02T .1003. The facility must contact the appropriate Aquifer Protection Section Regional Office Supervisor in writing noting the owner, location, and that the design complies with the above criteria to request exemption from ATC requirements. These treatment systems must meet all criteria and design requirements in 15A NCAC 02T .1000."

# This language has been changed for clarity per APS comments and now reads:

"New or expanding wastewater treatment facilities designed to discharge wastewater covered under this permit to surface waters <u>must receive an Authorization to Construct</u> (<u>ATC</u>) associated with this permit.

Closed-Loop Recycle Systems which meet design requirements in 15A NCAC 02T .1000 and do not discharge to surface waters, do not require an Authorization to Construct associated with this permit. However, these facilities must contact DWQ's Aquifer Protection Section Land Application Unit to obtain any necessary permits or approvals."

- Language in Part II, Section B, number 10, has been revised for clarity to read: "A record of
  unauthorized wastewater releases to surface waters, wetlands, or ground surface from
  closed-loop recycle systems permitted by the Aquifer Protection Section shall be
  documented and kept on site for a period of five (5) years, when stormwater discharges
  from these sites are permitted under NCG140000."
- In Part III, 1(b), and Part III, 4, "country of origin" was removed in both cases for clarity and ease of implementation to read: "A narrative description of handling and storage of fly ash, ash by-products, and recycled materials" and "The program shall address and maintain a record of the handling and storage of fly ash, ash by-products, and recycled materials", respectively.

- Part III, 2(c), the last sentence was removed. It previously stated: "A rain gauge and record
  of daily rainfall amounts shall be kept on site and up to date." This sentence was
  determined to be a typographical error. Additionally, this language was inconsistent with
  other DWQ SPU general permits.
- In Part IV, Section A, above Table Two, language regarding the tiered system has been deleted for clarity to now read: "A minimum of 60 days must separate each monitoring event unless monthly monitoring has been instituted."
- In Part IV, Section A, between tables 1 and 3, sentences were rearranged for clarification, but language was not changed unless otherwise noted.
- In Part IV, "monthly" has been replaced with "additional" for clarification to read: "A minimum of 60 days must separate each monitoring event unless additional monitoring has been instituted".
- In Part IV, Tables 3, 5, and 8 a column was added for "Units" for the purpose of clarification.
- In Part IV, in the Tiered Response Language, the wording "stormwater" was added before "parameter" for clarity when TPH is monitored in wastewater discharges. For example, it now reads "Immediately institute monthly monitoring for all stormwater parameters at every outfall…"
- In Part IV, Sections A & B, footnote language was corrected for a grammatical error. It read "For each sampled measurable storm event the total precipitation must be recorded using an on-site rain gauge". It was corrected to "...must be recorded using data from an on-site rain gauge".
- In Part IV, Sections A & B, current Draft Permit language states "Failure to monitor semiannually per permit terms, immediately institutes monthly monitoring for all stormwater parameters. After six (6) months of monthly monitoring, the permittee may make a request in writing to DWQ to return to a semi-annual monitoring schedule". **This has been changed per DWQ Surface Water RO suggestion to:** "Failure to monitor semi-annually per permit terms, immediately institutes monthly monitoring for all stormwater parameters. After six (6) months of monthly monitoring, the permittee may return to a semi-annual sampling monitoring schedule, unless the DWQ Regional Office requires continued monthly monitoring."
- For clarification, the wording "under a Tier Two Response" has been removed from Part IV, Section B, Fourth Sentence of the permit language. The sentence now reads "A minimum of 60 days must separate each monitoring event unless monthly monitoring has been instituted".
- In Part IV, Section B, two sentences were added to the end of paragraph two for clarification: "VMA stormwater discharges commingled with wastewater shall be considered wastewater. For more information see Part IV, Section D of this permit."
- In Part IV, Section C, the second sentence has been changed for clarity. It now reads: "Qualitative monitoring requires a visual inspection of each stormwater outfall regardless of representative outfall status and shall be performed as specified below in Table 6, during the analytical monitoring event, unless the permittee is required to perform additional sampling per the Qualitative Monitoring Response below".

• In Part IV, Section D, the language under "Analytical monitoring of the above authorized process wastewater discharges shall be performed as specified in Table 7." This wording has been changed for clarity to now read:

"If authorized process wastewaters commingle prior to discharge, sampling the combined discharge will meet the monitoring requirements of this permit. Sampling shall be performed during discharge; these events may or may not be associated with rainfall.

Authorized wastewater treatment facilities may include some wastewater recycling as a means of volume management.

Surface water discharges from authorized wastewater treatment facilities are subject to the provisions, monitoring requirements, and limits of this permit. Authorized wastewater treatment facilities with <u>no</u> wastewater discharges to surface waters are exempt from the requirements of Part IV, Section D of this permit. However, these ready-mixed plants with closed loop-recycle systems or other wastewater treatment facilities that do not discharge to surface waters must contact DWQ's Aquifer Protection Section Land Application Unit to obtain any necessary permits or approvals."

- In Part IV, Section D, Table 7, DWQ added the language: "EPA Method 1664 (SGT-HEM)" for clarification.
- In Part IV, Section D, Table 8, DWQ changed Footnote 4 to now read: "Per 15A NCAC 02B .0224. Permittees who discharge wastewater to HQW waters shall obtain a summer 7Q10 flow and report this information to DWQ. If the permittee cannot obtain a summer 7Q10 flow for the receiving waters at the discharge location, the permittee shall notify DWQ, and the DWQ Regional Office may require an annual flow report on a case-by-case basis."
- In Part IV, Section D, current Draft Permit language states "Failure to monitor wastewater quarterly per permit terms immediately institutes monthly monitoring for all wastewater parameters. Violation of permit limits twice in a row immediately institutes monthly monitoring for all wastewater parameters. In either case, after six (6) months of monthly monitoring, the permittee may make a request to return to a quarterly monitoring schedule. This request shall be sent in writing to DWQ." This has been changed per DWQ Surface Water RO suggestion to: "Failure to monitor wastewater quarterly per permit terms immediately institutes monthly monitoring for all wastewater parameters. Violation of permit limits twice in a row immediately institutes monthly monitoring for all wastewater parameters. In either case, after six (6) months of monthly monitoring, the permittee may return to a quarterly monitoring schedule, unless the DWQ Regional Office requires continued monthly monitoring."

# Conclusion

DWQ's overall intent in proposing changes to the General Permit has been to provide permit requirements that will encourage industrial permittees to respond with prompt corrective action to the discovery of pollutant discharges in excess of the benchmark values. DWQ received and considered comments on the draft General Permit and has incorporated comments, as indicated above.